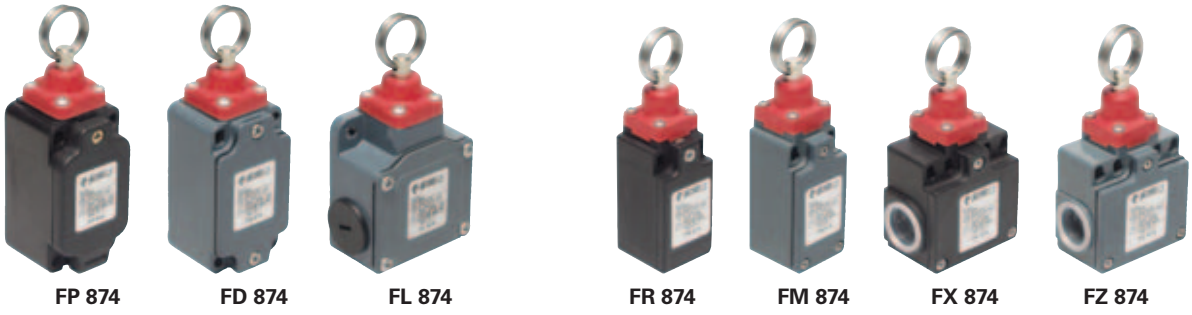
Selection diagram



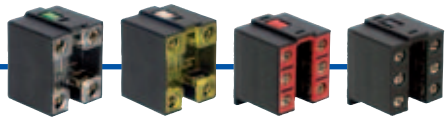
FP 874 FD 874 FL 874 FR 874 FM 874 FX 874 FZ 874

79 79 80

ACTUATORS ACTUATORS

FP FD FL FC

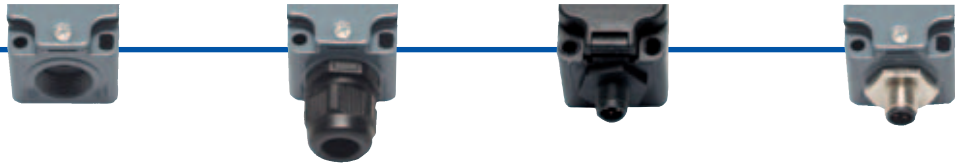
CONTACT BLOCKS



18 1NO+1NC slow action
9 2NC slow action
20 1NO+2NC slow action
21 3NC slow action

22 2NO+1NC slow action
33 1NO+1NC slow action
34 2NC slow action

CONDUIT ENTRIES



Threaded conduit entries (standard)
With cable gland assembled
With M12 plastic connector assembled and wired
With M12 metal connector assembled and wired

md ar ` ql mqfl k
^` ` bppl ov pl ia pbm^o^qbiv

Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

article / options

FD 1879-GM2K50

Housing	
FD	metal housing, one conduit entry
FL	metal housing, three conduit entries
FP	polymer housing, one conduit entry

Contact blocks	
18	1NO+1NC, slow action
9	2NC, slow action
20	1NO+2NC, slow action
21	3NC, slow action
22	2NO+1NC, slow action
33	1NO+1NC, slow action
34	2NC, slow action

Actuating head	
79	longitudinal head
80	transversal head (only for FD-FL housing)

Preinstalled cable gland or connectors	
	no cable gland or connector (standard)
K21	with assembled cable gland suitable for Ø 6 to Ø 12 mm cables range
...	.....
K50	with 5 poles M12 metal connector
...	.....

For the complete list of all combinations, please contact our technical office.

Threaded conduit entry	
	PG 13,5 (standard)
M2	M20x1,5

Contacts type	
	silver contacts (standard)
G	silver contacts gold plated 1 µm

article / options

FC 3379-GM1K22

Housing	
FC	metal housing, one conduit entry

Contact blocks	
33	1NO+1NC, slow action
34	2NC, slow action

Actuating head	
79	longitudinal head
80	transversal head

Preinstalled cable gland	
	no cable gland (standard)
K22	with assembled cable gland suitable for Ø 5 to Ø 10 mm cables range
K26	with assembled cable gland suitable for Ø 3 to Ø 7 mm cables range

Threaded conduit entry	
	PG 11 (standard)
M1	M16x1,5

Contacts type	
	silver contacts (standard)
G	silver contacts gold plated 1 µm

article / options

FD 874-M2K50

Housing	
FD	metal housing, one conduit entry
FL	metal housing, three conduit entries
FP	polymer housing, one conduit entry
FR	polymer housing, one conduit entry
FM	metal housing, one conduit entry
FX	polymer housing, two conduit entries
FZ	metal housing, two conduit entries

Contact blocks	
8	1NC, slow action

Preinstalled cable gland or connectors	
	no cable gland or connector (standard)
K21	with assembled cable gland suitable for Ø 6 to Ø 12 mm cables range
...	.....
K50	with 5 poles M12 metal connector
...	.....

For the complete list of all combinations, please contact our technical office.

Threaded conduit entry	
	PG 13,5 (standard)
A	PG 11 (only for FR-FX housing)
M1	M16x1,5 (only for FR-FX housing)
M2	M20x1,5

Main data

- Metal or polymer housing, from one to three conduit entries
- Protection degree IP67
- 7 contact blocks available
- Transversal head or longitudinal head versions
- M12 assembled connector versions
- Silver contacts gold plated versions
- Several accessories available

Markings and quality marks:

Approval IMQ:	EG605 (FD-FL-FC series) EG606 (FP series) EG610 (FR-FX-FK series) EG609 (FM-FZ series)
Approval UL:	E131787
Approval CCC:	2007010305230000 (FD-FL-FC series) 2007010305230014 (FP series) 2007010305230013 (FR-FX-FK series) 2007010305229998 (FM-FZ series)
Approval EZU:	1010151

Technical data

Housing

Housing type FP, FR and FX made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic ⧈
Housing type FD, FL, FC, FM and FZ made of metal, coated with baked epoxy powder.
FD, FP, FC, FR and FM series one conduit entry
FX and FZ series two conduit entries
FL series three conduit entries

Protection degree:	IP67 according to EN 60529

General data

Safety parameters:	see page 6/32
Ambient temperature:	from -25°C to +80°C

Version for operation in ambient temperature from -40°C to +80° C on request

Max operating frequency:	1 operation cycles / 6 s
Mechanical endurance:	1 million of operations cycles[1]
Max actuating speed:	0,5 m/s
Min. actuating speed:	1 mm/s
Driving torque for installation:	see pages 6/1-6/10

(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by EN 60947-5-1 standard..

Cross section of the conductors (flexible copper wire)

Contact blocks 20, 21, 22, 33, 34:	min.	1 x 0,34 mm²	(1 x AWG 22)
	max.	2 x 1,5 mm²	(2 x AWG 16)
Contact blocks 18, 8, 9:	min.	1 x 0,5 mm²	(1 x AWG 20)
	max.	2 x 2,5 mm²	(2 x AWG 14)

In conformity with standards:
IEC 60947-5-1, EN 60947-5-1, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, IEC 60529, EN 60529, NFC 63-140, VDE 0660-200, VDE 0113, CENELEC EN 50013.
Approvals:
IEC 60947-5-1, UL 508, GB14048.5-2001

In conformity with requirements requested by:
Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and Electromagnetic Compatibility 2004/108/EC.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.

⚠ **If not expressly indicated in this chapter, for the right installation and the correct utilization of all articles see requirements indicated from page 6/1 to page 6/10.**

Electrical data

Utilization categories

without connector	Thermal current (Ith):	10 A	
	Rated insulation voltage (Ui):	500 Vac 600 Vdc 400 Vac 500 Vdc for contact blocks 20, 21, 22, 33, 34	Alternate current: AC15 (50...60 Hz) Ue (V) 250 400 500 Ie (A) 6 4 1 Direct current: DC13 Ue (V) 24 125 250 Ie (A) 6 1,1 0,4
	Conditional shot circuit current:	1000 A according to EN 60947-5-1	
	Protection against short circuits:	fuse 10 A 500 V type aM	
	Pollution degree:	3	
with 4 or 5 poles M12 connector	Thermal current (Ith):	4 A	Alternate current: AC15 (50...60 Hz) Ue (V) 24 120 250 Ie (A) 4 4 4 Direct current: DC13 Ue (V) 24 125 250 Ie (A) 4 1,1 0,4
	Rated insulation voltage (Ui):	250 Vac 300 Vdc	
	Protection against short circuits:	fuse 4 A 500 V type gG	
	Pollution degrees:	3	
with 8 poles M12 connector	Thermal current (Ith):	2 A	Alternate current: AC15 (50...60 Hz) Ue (V) 24 Ie (A) 2 Direct current: DC13 Ue (V) 24 Ie (A) 2
	Rated insulation voltage (Ui):	30 Vac 36 Vdc	
	Protection against short circuits:	fuse 2 A 500 V type gG	
	Pollution degrees:	3	

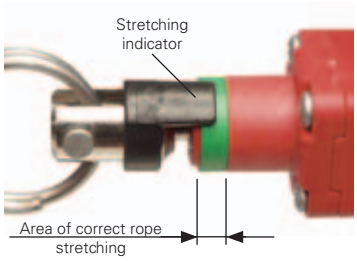
Description

These rope operated safety switches are installed on machines or conveyor belts, to activate the simple stop of the machine on every hand intervention on the rope, from any point.
Provided with **self-control function**, they constantly check their correct working operation, signalling with the opening of the contacts an eventual loosening or breaking of the rope.

Rotating heads

Removing the four fastening screws, in all switches, it is possible to rotate the head in 90° steps.

Rope regulation point indicator



The switches (head 79 and 80) are provided with a green ring that shows the area of the correct stretching of the rope. The installer has only to stretch the rope until the black indicator will be in the middle of the green area. If a traction (or loosening) of the rope it is high enough to permit the black indicator to go outside the correct stretching area, there will be the opening of the safety contacts.

Data type approved by IMQ, CCC and EZU

Rated insulation voltage (Ui): 500 Vac
400 Vac for contact blocks 20, 21, 22, 33, 34
Thermal current (Ith): 10 A
Protection against short circuits: fuse 10 A 500 V type aM
Protection degree: IP67
MV terminals (screw clamps)
Pollution degrees 3
Utilization category: AC15
Operation voltage (Ue): 400 Vac (50 Hz)
Operation current (Ie): 3 A
Forms of the contact element: Zb, Y+Y, Y+Y+X, Y+Y+Y, Y+X+X
Positive opening of contacts on contact block 18, 8, 9, 20, 21, 22, 33, 34

In conformity with standards: EN 60947-1, EN 60947-5-1 and subsequent modifications and completions, fundamental requirements of the Low Voltage Directive 2006/95/CE and subsequent modifications and completions.

Please contact our technical service for the list of approved products.

Data type approved by UL

Utilization categories Q300 (69 VA, 125-250 Vdc)
A600 (720 VA, 120-600 Vac)
Data of the housing type 1, 4X "indoor use only", 12, 13
For all contact blocks use 60 or 75 °C copper (Cu) conductor and wire size No. 12-14 AWG. Terminal tightening torque of 7,1 lb in (0.8 Nm).

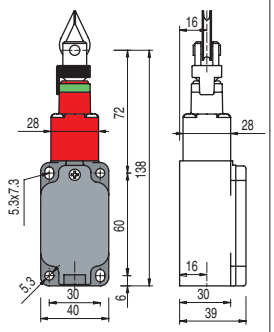
In conformity with standard: UL 508

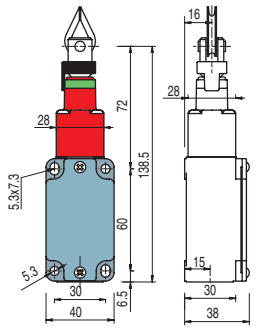
Please contact our technical service for the list of approved products.

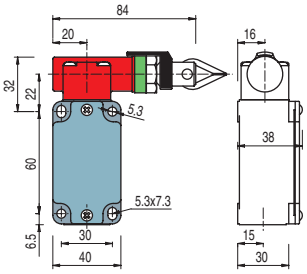
Dimensional drawings

Contacts type:

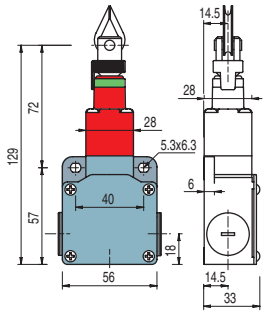
L = slow action

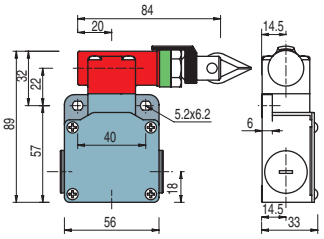


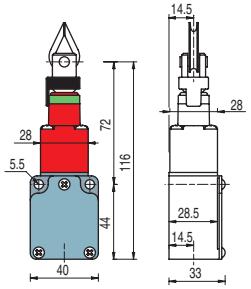


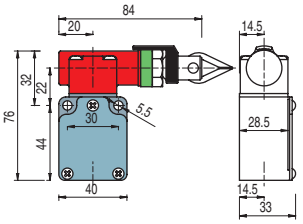


Contact blocks								
18	L	FP 1879	1NO+1NC		FD 1879	1NO+1NC	FD 1880	1NO+1NC
9	L	FP 979	2NC		FD 979	2NC	FD 980	2NC
20	L	FP 2079	1NO+2NC		FD 2079	1NO+2NC	FD 2080	1NO+2NC
21	L	FP 2179	3NC		FD 2179	3NC	FD 2180	3NC
22	L	FP 2279	2NO+1NC		FD 2279	2NO+1NC	FD 2280	2NO+1NC
33	L	FP 3379	1NO+1NC		FD 3379	1NO+1NC	FD 3380	1NO+1NC
34	L	FP 3479	2NC		FD 3479	2NC	FD 3480	2NC
Min. force		Initial 63 N...Final 79 N (90 N)			Initial 63 N...Final 79 N (90 N)		Initial 147 N...Final 235 N (250 N)	
Travel diagrams		page 4/114 - group 1			page 4/114 - group 1		page 4/114 - group 2	





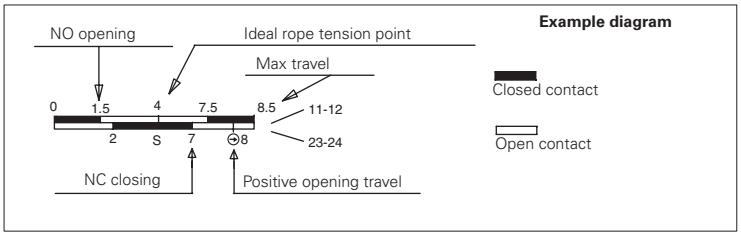




Contact blocks								
18	L	FL 1879	1NO+1NC	FL 1880	1NO+1NC			
9	L	FL 979	2NC	FL 980	2NC			
20	L	FL 2079	1NO+2NC	FL 2080	1NO+2NC			
21	L	FL 2179	3NC	FL 2180	3NC			
22	L	FL 2279	2NO+1NC	FL 2280	2NO+1NC			
33	L	FL 3379	1NO+1NC	FL 3380	1NO+1NC	FC 3379	1NO+1NC	FC 3380	1NO+1NC
34	L	FL 3479	2NC	FL 3480	2NC	FC 3479	2NC	FC 3480	2NC
Min. force		Initial 63 N...Final 79 N (90 N)		Initial 147 N...Final 235 N (250 N)		Initial 63 N...Final 79 N (90 N)		Initial 147 N...Final 235 N (250 N)	
Travel diagrams		page 4/114 - group 1		page 4/114 - group 2		page 4/114 - group 1		page 4/114 - group 2	

How to read travel diagrams

All measures in the diagrams are in mm



IMPORTANT:
In safety applications it is necessary to activate the switch **at least up to the positive opening point** indicated in the diagrams with the symbol ⊖. Operate the switch **at least with the positive opening force**, indicated between brackets, below each article, next the value of minimum force.

Accessories See page 5/1

All measures in the drawings are in mm

Contacts type:

L = slow action

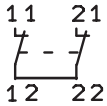
Contact blocks				
8 L	FP 874 → 1NC	FD 874 → 1NC	FL 874 → 1NC	
Min. force	Initial 63 N...Final 79 N (90 N →)	Initial 63 N...Final 79 N (90 N →)	Initial 63 N...Final 79 N (90 N →)	
Travel diagrams	page 4/114 - group 3	page 4/114 - group 3	page 4/114 - group 3	

Contact blocks				
8 L	FR 874 → 1NC	FM 874 → 1NC	FX 874 → 1NC	FZ 874 → 1NC
Min. force	Initial 63 N...Final 79 N (90 N →)	Initial 63 N...Final 79 N (90 N →)	Initial 63 N...Final 79 N (90 N →)	Initial 63 N...Final 79 N (90 N →)
Travel diagrams	page 4/114 - group 3	page 4/114 - group 3	page 4/114 - group 3	page 4/114 - group 3

Travel diagrams table

Contact blocks		Group 1	Group 2	Group 3
18 1NO+1NC	11 23 / 12 24	0 4 8.5 / 1.5 S 7 8	0 3.5 8 13 16 / 4 S 12.6 14	
8 1NC	11 21 / 12 22			0 1 4 8 8.5 / S 6.3
9 2NC	11 21 / 12 22	0 4 8 8.5 / 1.4 S 7.2	0 8 14.5 16 / 3.5 S 13	
20 1NO+2NC	11 21 33 / 12 22 34	0 4 8 8.5 / 1.5 S 7	0 3.8 8 12.6 14 16 / 3.5 S 13	
21 3NC	11 21 31 / 12 22 32	0 4 8 8.5 / 1.5 S 7	0 3.5 8 12.6 14 16 / S	
22 2NO+1NC	11 23 33 / 12 24 34	0 4 8 8.5 / 1.5 S 7	0 3.8 8 12.6 14 16 / 3.5 S 13	
33 1NC+1NO	13 21 / 14 22	0 4 8 8.5 / 1.5 S 7	0 3.8 8 12.6 14 16 / 3.5 S 13	
34 2NC	11 21 / 12 22	0 4 8 8.5 / 1.5 S 7	0 3.8 8 12.6 14 16 / S	

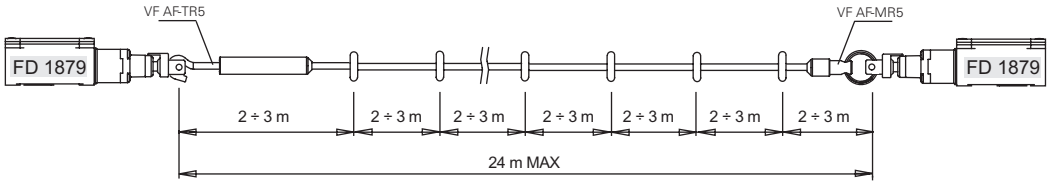
In the rest position (with rope correctly tightened) the two contacts of **contact block 8** are both closed and are activated respectively by actuating or loosening the rope. In order to use this contact block for safety applications is necessary to connect the two contacts in series. For this reason in wiring diagrams the **contact block 8** is indicated as 1NC, whereas in travel diagrams are indicated both contacts.



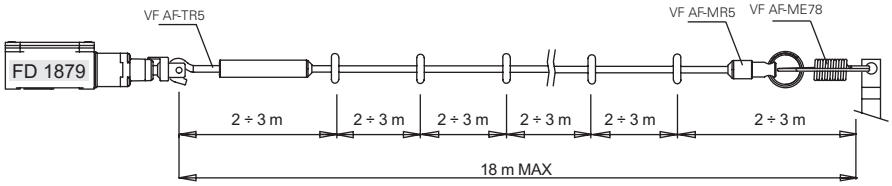
Items with code on the **green** background are available in stock

Application examples and max rope length for switches with longitudinal heads

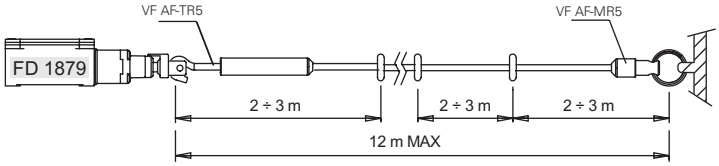
Example A



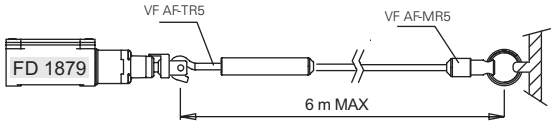
Example B



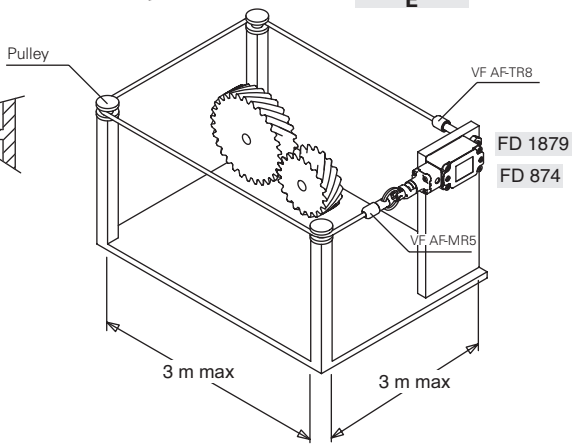
Example C



Example D

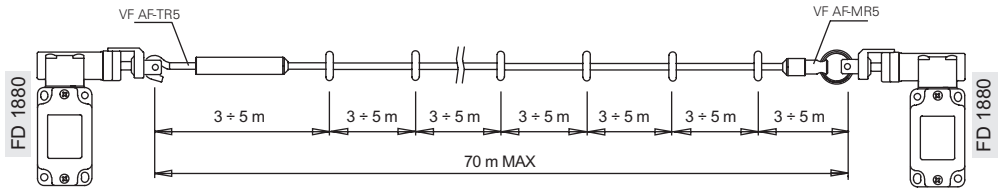


Example E

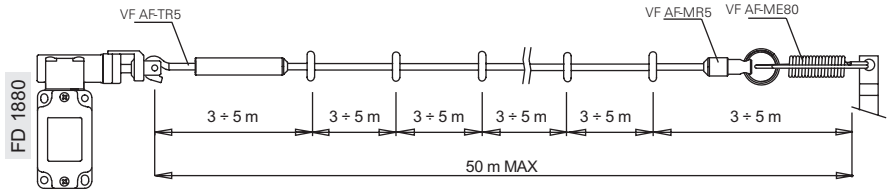


Application examples and max rope length for switches with transversal heads

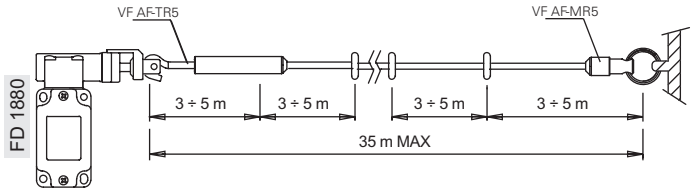
Example F



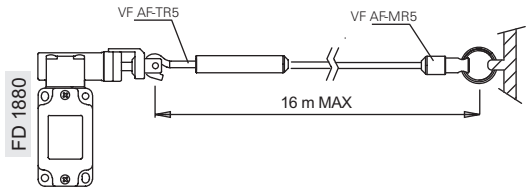
Example G



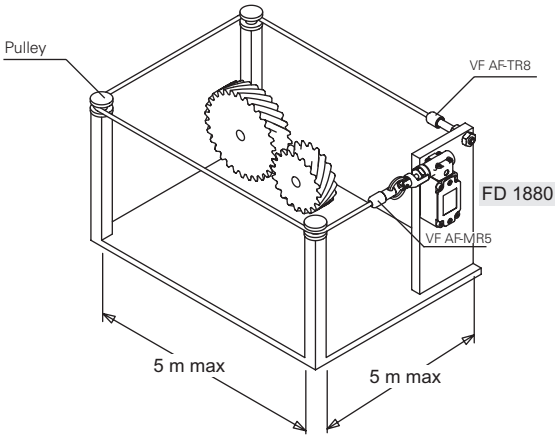
Example H



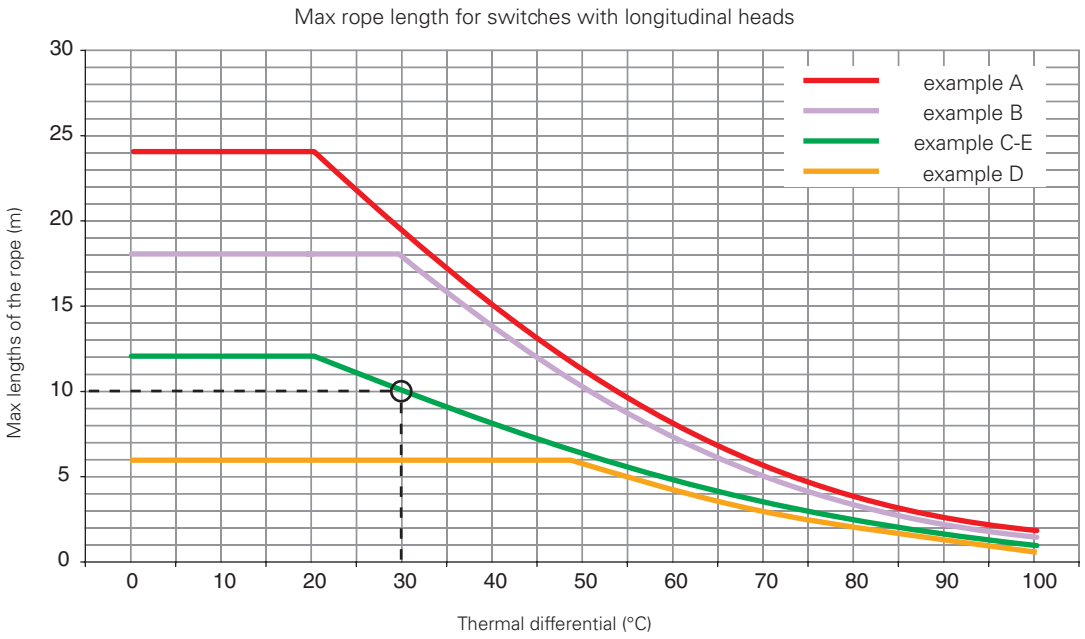
Example I



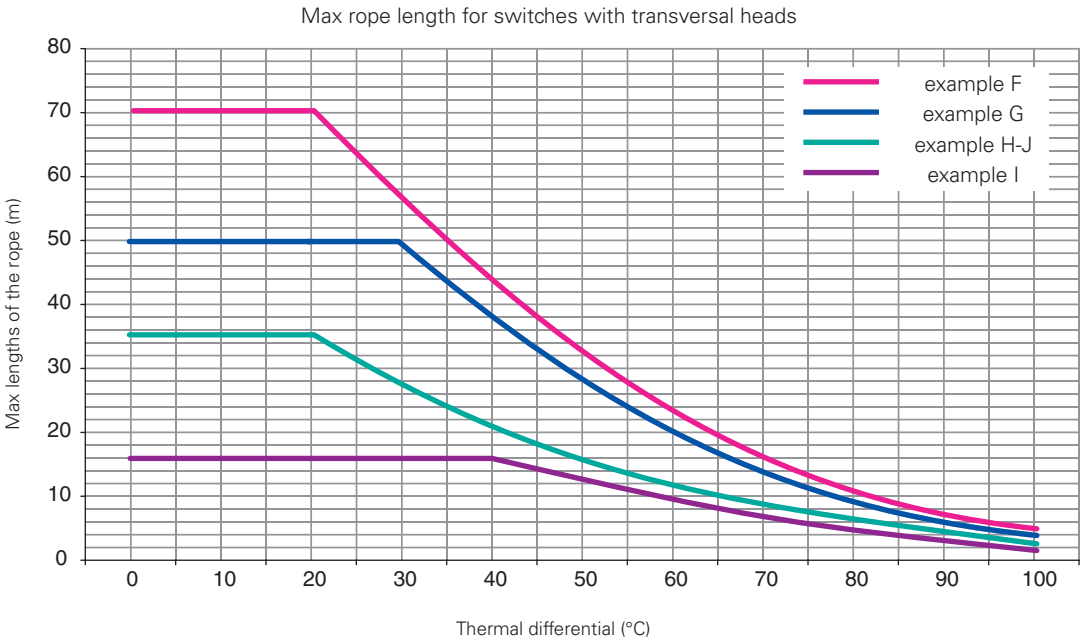
Example J



Max rope length

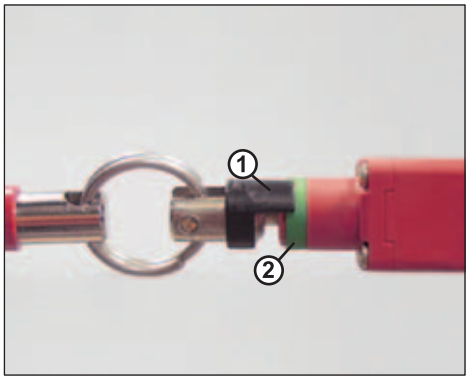


In the diagram, the suggested max. rope lengths with regard to changes of temperature (thermal differential) to which the switch is expected to be exposed in the working area are indicated.
For instance, for an example C installation which expects a thermal differential of 30°C, a max rope length of 10 meters is suggested.



Important: The above data are guaranteed only using original rope and accessories. See page 4/117.

Adjusting of intervention point



For switches with head 79 and 80: Stretch the rope connected to the switch, until the end of the indicator (1) reaches about the middle of the green ring (2).

For switches with head 74: stretch the rope connected to the switch till the thimble will be at about 4 mm from the head.